

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application

No. 09/965,341

Samir S. Soloman

Examiner: Yuwen Pan

Filed: September 27, 2001

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For: Communication System Receiver
and Method for Concurrent
Receiving of Multiple Channels

) Group No. 2682

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RESPONSE AFTER FINALMail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Commissioner:

In response to the Final Office Action dated February 24, 2004, please amend the above-identified application as indicated below.

CERTIFICATE OF MAILING/TRANSMISSION (37 CFR 1.8(a))

I hereby certify that this correspondence is, on the date shown below, being:

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- ☒ transmitted by facsimile to the Patent and Trademark Office.

Depositor's Name: Sheryl Schoen
(type or print name)Date: April 20, 2004Signature: Sheryl Schoen

PENDING CLAIMS AS AMENDED

1. (Currently Amended) A communication receiver, comprising:
 - ~~a receiver portion for down converting a received signal to base band frequency;~~
 - a low pass filter ~~for filtering~~ that filters a said base band frequency signal to produce on-channel received samples by removing out-of-channel signals from the baseband signal; and
 - a processor that processes ~~for processing~~ said base band signal frequency to produce out-of-channel received samples.

2. (Currently Amended) The receiver as recited in claim 1, further comprising:
 - a receiver back-end portion that:
 - processes ~~for processing~~ said on-channel and out-of-channel received samples essentially at the same time to decode said on-channel received samples, and
 - determines ~~for determining~~ at least one of a link quality and global positioning system originated information of said out-of-channel received samples.

3. (Currently Amended) The receiver as recited in claim 1, further comprising wherein said ~~receiver portion for down converting includes~~:
 - an oscillator for producing a frequency source that generates a first signal at essentially the same frequency as an on-channel frequency; and
 - a multiplier ~~for down converting said~~ that mixes an amplified, received signal and the first signal to produce the ~~to base band signal frequency by multiplying said received signal to said local oscillator produced signal.~~

4. (Currently Amended) The receiver as recited in claim 1, further comprising wherein said ~~receiver portion for down converting includes~~:
 - a low noise amplifier that amplifies a ~~for amplifying said~~ received signal for processing in said receiver comprising an on-channel signal and out-of-channel signals.

5. (Previously Presented) The receiver as recited in claim 2, wherein said receiver back-end portion includes;

a number of fingers and a searcher for processing said on-channel and out-of-channel received samples.

Claims 6-20 (Cancelled).

Please add the following new claims:

21. (New) A communications receiver, comprising:

means for receiving a first signal comprising an on-channel signal and out-of-channel signals;

means for mixing the first signal with a second signal at essentially the same frequency as an on-channel frequency to produce a base band signal;

means for filtering said base band signal to produce on-channel received samples by removing out-of-channel signals from the baseband signal; and

means for processing said base band signal to produce out-of-channel received samples.

22. (New) A communication receiver, comprising:

a low noise amplifier that amplifies a received signal comprising an on-channel signal and out-of-channel signals;

a frequency source that generates a first signal at essentially the same frequency as an on-channel frequency;

a multiplier that mixes the amplified, received signal and the first signal to produce a base band signal;

a low pass filter that filters said base band signal to produce on-channel received samples by removing out-of-channel signals from the baseband signal; and

a processor that processes said base band signal to produce out-of-channel received samples that can be used to search for pilots of candidate frequencies.

23. (New) A communication method, comprising:

- receiving a first signal comprising an on-channel signal and out-of-channel signals;
- mixing the first signal with a second signal at essentially the same frequency as an on-channel frequency to produce a base band signal;
- filtering said base band signal to produce on-channel received samples by removing out-of-channel signals from the base band signal; and
- processing said base band signal to produce out-of-channel received samples, wherein the out-of-channel received samples include pilot information for possible candidate frequencies that can be used to search for pilots of candidate frequencies.

24. (New) A communication receiver, comprising:

- means for filtering a base band signal to produce on-channel received samples by removing out-of-channel signals from the base band signal; and
- means for processing said base band signal to produce out-of-channel received samples that can be used to search for pilots of candidate frequencies.

25. (New) The receiver as recited in claim 24, further comprising:

- means for processing the on-channel and out-of-channel received samples essentially at the same time to decode said on-channel received samples, and that determining at least one of a link quality and global positioning system originated information of said out-of-channel received samples.

26. (New) The receiver as recited in claim 24, further comprising:

- means for generating a first signal at essentially the same frequency as an on-channel frequency; and
- means for mixing the amplified, received signal and the first signal to produce a base band signal.

27. (New) The receiver as recited in claim 24, further comprising:

means for amplifying a received signal comprising an on-channel signal and out-of-channel signals.

28. (New) The receiver as recited in claim 25, wherein the means for processing comprises:
a plurality of fingers; and
a searcher for processing said on-channel and out-of-channel received samples.

29. (New) A method, comprising:
amplifying a received signal comprising an on-channel signal and out-of-channel signals
generating a first signal at essentially the same frequency as an on-channel frequency;
mixing the amplified, received signal and the first signal to produce a base band signal;
filtering the base band signal to produce on-channel received samples by removing out-of-channel signals from the baseband signal; and
processing said base band signal to produce out-of-channel received samples.

30. (New) The method as recited in claim 29, further comprising:
wherein filtering and processing takes place at essentially at the same time.

31. (New) The method as recited in claim 29, further comprising:
determining at least one of a link quality and global positioning system originated information based on said out-of-channel received samples.

32. (New) The method as recited in claim 29, wherein the out-of-channel received samples include pilot information for possible candidate frequencies that can be used to search for pilots of candidate frequencies.

REMARKS

Applicant appreciates the thorough examination of the application that is reflected in the Office Action dated February 23, 2004. To expedite prosecution of this application, Applicant amends claims 1-4, and cancels claims 6-19 without prejudice to filing a divisional application to pursue to the subject matter of those claims. These amendments are not made in response to any rejection in the Office Action, but only to expedite prosecution. Applicant also adds new claims 21-32.

Applicant believes the foregoing amendments comply with requirements of form and thus may be entered under 37 C.F.R. § 1.116(a) as presenting rejected claims in better form for consideration on appeal. Alternatively, to the extent any of these amendments are deemed to touch the merits, then entry is requested under 37 C.F.R. § 1.116(b). These amendments were not earlier presented because they are in response to the matters pointed out for the first time in the Final Office Action.

Claims 1-5 and 21-32 are pending in the application. Reconsideration of the application is respectfully requested.

Art-based Rejections**Claims 1-5**

The Official Action rejects claim 1 under 35 U.S.C. 102(b) as being anticipated by Horner et al. (USPN 5,357,544 A), rejects claim 4 under 35 U.S.C. 103(a) as being unpatentable over Horner et al. further in view of Bottomley. (WO 98/19491), and rejects claim 5 under 35 U.S.C. 103(a) as being unpatentable over Horner et al. further in view of Wiley et al. (USPN 5,854,785 A).

Applicant respectfully traverses these rejections for at least the following reasons.

Claim 1

To assist the Examiner in understanding how claim 1 reads on an embodiment of the invention shown, for example, in FIG. 3, Applicant annotates claim 1 as indicated below. The

application discusses this embodiment, for example, at page 8:17 through page 9:2 and at page 11:1 through page 12:11 of the specification. Applicant notes that the claims should not be construed as being limited to these embodiments, and that the annotation is provided only for the purpose of showing the Examiner how claim 1 reads on these embodiments. Claim 1 relates to a communication receiver that requires:

a low pass filter (304) that filters a base band signal (OUTPUT OF 302) to produce on-channel received samples (305) by removing out-of-channel signals from the baseband signal (OUTPUT OF 302); and
 a processor (307) that processes said base band signal (OUTPUT OF 302) to produce out-of-channel received samples (306).

Applicant respectfully submits that the cited references fail to teach or suggest, for example, "a processor that processes said base band signal to produce out-of-channel received samples," as recited in claim 1. For exemplary benefits associated with this feature, see, for example, 5:1-14, 8:23-9:2, and 14:1-7 of the present application. Applicant notes that the claims should not be construed as being limited by this embodiment or by the particular benefits described.

The Horner Reference

The receiver 10 in Horner includes an IF downconverter 16 that down converts the frequency of the selected band from RF range to an IF band, and then extracts an encoded signal by stripping away the carrier. See Horner 3: 44-59. A digitized composite signal is input to DSP 20 for decoding the composite FM signal and extracting the left and right channel information. See Horner 3:68 through 4:2. As shown in FIG. 2 of the Horner et al. reference, the 152 KHz output of the A/D converter 18 is passed to the mixing function 26. ***The output of the mixing function 26 is the base band signal.*** in Horner, the output of the mixing function 26 is passed through a low-pass anti-aliasing filter 30 and then to an 8 to 1 decimator function 32 that reduces the processing rate from 152 KHz to 19 KHz thereby providing an error signal at the rate of once per pilot period.

The Final Office Action

In para. 1 of the Final Office Action, the Examiner argues that “One processing block receives the base band signal and output a pilot signal, an out-of channel signal. Both the pilot and base band signal then pass to another block, decoder in order to output the on channel signals (see figure 1 and 2).”

The Office essentially argues that the output of the phase locking and tracking function 22 is a “base-band signal.”

Applicant disagrees and points the Examiner to col. 5, lines 4-8 of Horner which discusses that “loop filter 34 ...passes only the pilot signal portion which has been modulated down to D.C. ... The output of loop filter represents the phase error between the pilot signal and the reference signal.” Thus, the output of Horner’s loop filter 34 is not “a base band signal.”

Significantly, the output of the mixing function 26 is not passed to a processor, much less “a processor that processes said base band signal to produce out-of-channel received samples,” as recited in claim 1.

For at least the foregoing reasons, Applicant respectfully submits that the cited references fail to teach or suggest at least the above recitations of claim 1. Accordingly, Applicant respectfully submits that claim 1 is patentable over the cited references. In addition, Applicant respectfully submits that dependent claims 2-5 are separately patentable at least by virtue of their dependency from independent claim 1, and also because those claims recite additional features that are not taught or suggested by the cited references.

Applicant submits that new claims 21-32 are also patentable for at least the same reasons.

Claims 6-19

The Official Action rejects claims 6-20 under 35 U.S.C. 103(a) as being unpatentable over Horner et al. further in view of Soliman et al. (USPN 6,321,090 B1).

Applicant cancels claims 6-19 without prejudice to filing an application to pursue to the subject matter of those claims. Accordingly, the rejection of claims 6-19 is moot.

REQUEST FOR ALLOWANCE

In view of the foregoing, Applicant submits that all pending claims in the application are patentable. Accordingly, reconsideration and allowance of this application are earnestly solicited. Should any issues remain unresolved, the Examiner is encouraged to telephone the undersigned at the number provided below.

Respectfully submitted,

Dated: April 20, 2004

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